(2) and based on a single piece construction of the A-column and wherein the radial or tangential deformation is performed by flow turning.

34. (currently amended) The method of producing an A-column according to claim 31 further comprising forming the A-column as a single part out of the tubular starting part (A) and wherein the radial or tangential deformation is performed by stretch forming.

35. (new) The method for producing an A-column according to claim 31 wherein the radial or tangential deformation is performed by forging.

36. (new) The method for producing an A-column according to claim 31 wherein the radial or tangential deformation is performed by swaging.

37. (new) The method for producing an A-column according to claim 31 wherein the radial or tangential deformation is performed by hammering, forging swaging, rotary kneading, rolling, flow turning, or stretch forming.

REMARKS

Claims 19 to 34 continue to be under consideration.
New claims 35 to 37 are being introduced.
New claim 35 is based on the language of claim 23.
New claim 36 is based on the language of claim 23.
New claim 37 is based on the language of claim 23.

Claim 19 is being amended bases on the language of claim 33.

Claim 21 is being amended bases on the language of claim 23.

Claim 33 is being amended bases on the language of claim 23.

Claim 34 is being amended bases on the language of claim 23.

The Office Actionrefers to Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2007 has been entered.

Applicant appreciates the withdrawal of the Final Rejection and the entry of aplicant's submission of October 31, 2008,

However, the Request for Continued Examination was accompanied by a Request for a three months Suspension of the case. Instead an Office Action was issued on December 26, 2007 prior to an Expiration of a three months period of suspension. Applicant respectfully requestsfavorable scheduling of further communications.

The Office Action refers to Claim Rejections - 35 USC § 103.

Claims 19-20,23-26, and 29-34 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bignucolo et al. (US Patent 6,513,243) in view of Meredith (US Patent 5,074,555).

The rejection is respectfully traversed.

Bignucolo et al. discloses a method of producing a hollow molded part made of a metallic material in a shape of an A-column having a tubular starting part (1) with an outer diameter and a starting wall thickness (Figure 1).

Applicant respectfully disagrees. The reference Bignucolo et al. teaches a front axle for industrial vehicles and not an A-column.

In addition, the second intermediate product of the reference Bignucolo et al., column 2, lines 47 and 48, does not have a tubular starting part (1) with an outer diameter but instead "has a central portion 3 of substantially elliptical cross-section 6b". An elliptical cross-section does not exhibit a "diameter" but instead a number of varying radii.

Initially the tubular starting part reduces, by radial deformation performed by rolling (fluoforming, rollers, Column 2, lines 32-35), a second conical region (5) and a third cylindrical region (4) to a smaller diameter (Column 2, lines 36-41) to form a mold blank (a hollow first intermediate product 2). The mold blank's second conical region is then bent under axial pull tension to a curvature (Column 2, lines 43-55, Figure 3).

Applicant respectfully disagrees.

The applicant states in claims 19, 25 and 31 that the second conical region (2) is being bent to form an A-column..

The term "bent" can have two different meanings depending on the language context, according to a first meaning,"bent" can refer to an area having a curvature. This is the meaning of the word "bent" in claims 19, 25 and 31 of the present application. According to a second meaning, "bent" can refer to an item being not aligned any longer relative to another item. This second meaning of "bent" is referred to in the reference Bignucolo et al., column 2, lines 48 to 55: "..., which has a central portion 3 of substantially elliptical cross-section 6b which is elongate in a horizontal direction and with the portions 4 and 5 symmetrically inclined or bent upwards with respect to the central portion 3, and is provided with respective longitudinal impressions 6a having their maximum depth at the ends of the central portion 3 in the vicinity of the frustroconical portions 5.". In other words this means that the portions 4 and 5 are bent up relative to the central portion 3 of the reference Bignucolo et al. and that respective longitudinal impressions 6a have their maximum depth at the ends of central portion 3 in the vicinity of the frustoconical portions 5.

If one relates the central portion 3 and the frustroconical portion 5 of the reference Bignucolo et al. with the first cylindrical region 1 and the second conical region 2 of the instant application, then the bending of the reference Bignucolo et al. occurs between the central portion 3 and the frustroconical portion 5, while applicants claims 19, 25 and 31 require the bending to take place in the second conical region 2. In fact, as recited of the reference Binucolo et al., the central portion 3 is "provided with respective longitudinal impressions 6a having their maximum depth at the ends of the central portion 3 in the vicinity of the frustroconical portions 5.". Thus the bending according to the reference Bignucolo et al. occurs "at the ends of the central portion 3

in the vicinity of the frustroconical portions 5.", which position is in clear contrast to the bending position in the second conical region 2 of applicant's claims.

Therefore in contrast to the allegation of the Office Action the reference Bignucolo et al. fails to teach that "mold blank's second conical region is then bent".

There is also no teaching in the reference Bignucolo et al of any bending occurring "under axial pull tension".

In addition, the reference Bignucolo et al.does not teach that a curvature is associated with the bending, but teaches instead that longitudinal impressions 6a are present.

It is further noted that according to the reference Bignucolo et al., column 2, lines 47 and 48, that the second intermediate product 6 has a central portion 3 of substantially elliptical cross-section 6b in clear contrast to the first cylindrical end portion of claim 31 of the instant application.

After the production of the raw blank according to the reference Bignucolo et al. by radial deforming having a central section, thereto adjoining narrowing sections and ends with a reduced diameter, there is performed the squeezing of the first intermediate product such that a second intermediate product 6 is generated, where the second intermediate product 6 exhibits a central section with an elliptical cross-section, wherein the cross-section becomes rounded toward the ends.

A final forming step is performed by inner high pressure metal forming (hydroforming) in the first and in the second regions (Column 2, lines 66-67 & Column 3,1-4; Figure 6).

Applicant respectfully disagrees.

According to the reference Bignucolo et al, the hydroforming step is applied to the semifinished product 7 and not to the second intermediate product 6, While the second intermediate product already has a central portion 3 of substantially elliptical cross-section 6b, the configuration of the semifinished product 7 is further changed according to the reference Bignucolo et al., column 2, lines 60 to 65: "In this way there is obtained a semifinished product 7 (FIG. 4) which is of quadrangular cross-section 7a in the central portion 3 and which has transitional portions 7b in which the quadrangular section gradually evolves towards the ends 4, the section of which remains circular.".

Thus the hydroforming step of Bignucolo et al. gives the structure shown in Fig, 4 with the quadrangular cross-sections, which are clearly different from the cylindrical first end portion of applicant's A-column.

Additionally, a step has been introduced in claims 19, 25, and 31 requiring "maintaining a cylindrical form of the first cylindrical end portion;". This clause expressly distinguishes claims 19, 25, and 31 from the teaching of the reference Bignucolo et al.

As to Figure 6, this figure clearly shows a front axle for a vehicle and not the A-column of applicant's claims.

Bignucolo et al. discloses the invention substantially except for an increased wall thickness relative to the starting wall thickness in the second and third regions.

Applicant respectfully submits that additional differences between the reference Bignucolo et al. and the applicant's claims have been set forth above. The position of the bending is different, the A-column obtained by applicant's method is different from the front axle of the reference, the elliptical cross-section of the central portion 3 of the second intermediate product 6, and the quadrangular cross-section of the central portion 3 of the semi-finished product 7 are different from applicant's first conical end portion 1 and there is no maintaining of a first cylindrical end portion in the reference Bignucolo et al.

The United States Patent 6,513,243 to Bignucolo et al. teaches a method for production of front axles of industrial vehicles and not the production of an A-column of a motor vehicle. It is an object of the reference Bignucolo et al. to develop a hollow front axle, which exhibits a particular configuration and can be produced in a simple and economic fashion.

It is not an object of the reference Bignucolo et al. to furnish regions with reinforcement.

According to the construction of the reference Bignucolo et al., a narrowing region 5 and the cylindrical region 4 adjoining the narrowing region 5 with a lesser diameter as the region 3 are formed by a radial deformation process. However the reference Bignucolo et al. fails to teach that the wall thickness in the regions 5 and

4 is increased comparison with the wall thickness in the region 3 and thereby a reinforcement is formed in the wall in the regions 5 and 4.

Figures 8 and 9 show unequivocally that the wall thickness of the product of the reference Bignucolo et al. is constant over the complete length of the product and that no increased wall thickness is present in the regions 5 and 4, where the outer diameter was reduced. In particular, no increased wall thickness resulted in the regions 17-21 according to figure 8 of the reference Bignucolo et al. and also in the regions 24-26 according to figure 9 of the reference Bignucolo et al.

In order to provide a reinforcement 9, the reference Bignucolo et al. teaches to weld on in each case two plates 11 at oppositely disposed positions of the front axle in the region 8a according to figures 6 and 7. This requires a substantial additional expenditure. If the reference Bignucolo et al. would have taught to correspondingly reinforce directly the wall thickness of the front axle, at the additional reinforcement 9 and therewith the welding on of the additional plates 11 could be dispensed with. An increase in wall thickness in the regions 5 and 4 is not taught in the reference Bignucolo et al. and therefore is not anticipated by the reference Bignucolo et al.

The possibility of obtaining a reinforcement in the bent and narrowing down region by a wall thickness increase and therewith assuring in that location a higher

stability in case of a crash is nowhere mentioned in the reference Bignucolo et al. and is impossible to obtain with the construction of the reference Bignucolo et al..

The teaching of the present application does not require two separate reinforcement devices to be mounted at the axle, since larger wall thickness can be generated in the region of the required reinforcements.

Meredith discloses a method of radially deforming a tubular shaft having second (61) and third (62) regions with an increased wall thickness (22) relative to the starting wall thickness (20) (Column

3, line 55-56 and Figures 2a-b). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that Bignucolo et al.'s radial deformation step can increase the wall thickness of the second and third region because "it is desirable to design (a tubular part) without the excessive weight (and) having a wall thickness along the tapered length (second region) and the tip portion (third region) able to provide a desired weight distribution and to withstand the forces exerted on the shaft tip (third region)" (Column 1, lines 45-50).

Applicant respectfully traverses.

A golf club as taught by the reference Meredith and a front axle of an industrial vehicle are such different objects that it is not possible to predict that a modification made to one of them will also benefit the other.

The reference Meredith teaches the production of a shaft for sports apparatus wherein the starting diameter of a first starting region becomes reduced in a second and third region with a smaller diameter and wherein a starting wall

thickness becomes increased in the second and third region with a larger wall thickness. Here the large outer diameter of the shaft of the gripper region, wherein a larger diameter is necessary for gripping the golf club handle, becomes reduced in the third region, where the beating element is attached or where the tip of the golf shaft is located and where therefore a smaller outer diameter is necessary. The long extended second region extends between the first and third region and connects the first and third region. The second region is formed conically. The wall thickness becomes increased from the small starting wall thickness up to the larger wall thickness in the third region. The larger wall thickness in the third region shall assure that the golf club withstands a load, which acts on the third region or the shaft tip.

In contrast to the A-column of the present application and which is bent in the second conical region, the construction of Meredith is a straight long extended shaft of a sporting equipment and in particular golf club which is not bent in the second region but exhibits overall a straight shape.

The wall thickness increase in the second tapered region of the reference Meredith has the purpose to assure a uniform reduction of diameter from the handle region to the beater region and to achieve a larger wall thickness in the beater region, since the beater region or shaft tip is to withstand the loads during a

beating with the golf club as stated in the reference Meredith column 1, lines 45 to 50.

In addition the second tapered region of a golf club does not have to accept any loads which would be comparable to those occuring in the case of a crash of a motor vehicle.

A bending in the second conical region and the thereto following inner high pressure deforming according to the present Invention is not performed according to the Meredith reference and is certainly also not desired, since otherwise a nonfunctioning golf club with an undesirable shape would be generated. If one would bent a shaft produced by radial deformation in the following and deform by the inner high pressure deforming, then a product would be generated, which has nothing to do with the golf club. Therefore a person of ordinary skill in the art cannot derive a suggestion to modify the construction according to the reference Bignucolo et al. based on the teaching of the reference Meredith.

In an attempt to combine the constructions according to the reference Bignucolo et al. and the reference Meredith, a person of ordinary skill in the art would not reach the construction of the present Invention, since the reference Bignucolo et al. produces a reinforcement in the conical region, in which conical region a reinforcement is necessary, by additional elements attached to the conical region, whereas the reference Meredith demands only in the third region a

reinforcement, does not teach a second bent region, which is to withstand increased loads in case of a crash.

Looking at the references, Bignucolo et al. teaches in column 3, lines 7 and 8 "two reinforcing devices 9 are mounted on the finished axle 8 ". There is no teaching in the reference Bignucolo et al. as to why the reinforcing devices 9 should not be used or should be substituted by an increased wall thickness in certain areas. There is no teaching in the Meredith that an increased wall thickness is better than a reinforcing device 9 of the Bignucolo et al. reference.. There is no reasoning in the Office Action as to why areas of increased wall thickness are more effective than a reinforcing device 9 for a front axle.

As the Meredith patent issued December 24, 1991 and the Bignucolo et al. patent application was filed June 14, 2001, the reference Bignucolo et al had the choice of eliminating the reinforcing device 9 and of incorporating instead wall thickness differences in certain areas of the front axle. Nevertheless, the reference Bignucolo et al. employed the reinforcing device 9. There is no showing in the Office Action that a person of ordinary skill in the art would construct differently than the construction of the reinforcing device 9 of the reference Bignucolo et al.

As the semifinished product 7 of the reference Bignucolo et al is of quadrangular cross-section there are inherently different thicknesses and strengths of walls. Thus it would not make sense to a person of ordinary skill in the art to add the wall thickness differences to those already present in the semifinished product 7 of Figure 4 of the reference Bignucolo et al.

The reference Bignucolo et al. employs the following steps:

1. fluoforming gives first intermediate product 2
2. pressing or crushing gives second intermediate product 6
3. insertion into finishing die gives semifinished product 7
4. hydroforming delivers finished front axle 8.

The reference Meredith employs the following steps:

1. rotary swaging - decreased and increased wall thickness
2. sink drawing
3. rotary swaging
4. cutting off clamping surface of front portion

Rotary swaging is the only step taught by the reference Meredith to give a decreased or increased wall thickness. There is no teaching within the four corners of the references Bignucolo et al. and Meredith how to accomplish "increased wall thickness" with the steps of the reference Bignucolo et al.

The Office Action fails to present any convincing details as to how a person of ordinary skill in the art would combine the reference Bignucolo et al. and the reference Meredith to produce the A-column according to the present Invention.

Regarding claim 24, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the particular numerical values claimed depending on the characteristics desired for the finished product, they are not a patentable distinction.

Applicant respectfully disagrees.

The particular numerical values of claim 24 are for an A-column and the numerical values are different from those for a front axle of an industrial vehicle or for a golf club. Thus the particular values are an additional means for distinguishing between an A-column and a golf club or a front axle.

It is very clear that items of different geometry are patentable over each other. The different geometries are expressed by ratios of various dimensions or of particular numerical values. Even though both chairs and tables have legs, they are in different patent classes. Similarly we find the instant A-colum classified in a different patent class as compared with both the patent class of the front axle of an industrial vehicle according to Bignucolo et al. and the patent class of a golf club according to Meredith.. A person of ordinary skill in the art would not combine items in different patent classes (golf club and front axle) to obtain another item in yet another patent class.

Claim 24 inherently establishes the size ratios of the parameters of the A-column of the present application and thereby clearly defines over the references applied.

Regarding claim 33, taking into consideration the lack of numerical values for the larger loads, one of ordinary skill in the art at the time the invention was made could consider this limitation broadly and consider that any additional load subjected to the workpiece would satisfy the claim.

Claim 33 sets forth that A-columns constructed according to the present invention will withstand higher loads in a crash case as compared to A-columns which are not single piece and/or have no wall thickening.

5. Claims 21-22 and 27-28 stand rejected under 35 U.S.C. 103(a) as being unpatentable Over Bignucolo et al. and Meredith as applied to claims 19-20 and 23-24 above, and further in view of Self et al. (US Patent 2,267,623). The combination of Bignucolo et al. and Meredith disclose the invention substantially except for an intermediate annealing prior to the pressure forming and annealing between the deformation step and the pressure forming step.

Applicant respectfully traverses the references Bignucolo et al. and Meredith. As set forth above, the combination of the references Bignucolo et al. and Meredith fail in more than one way to render obvious the present invention.

Self et al. discloses an intermediate annealing after a deformation step (Column 2, lines 35-39). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to anneal the product in order to prevent "failure of the blank" (Column 5, lines 69-70) in a manner such as cracking or breaking before further forming is performed.

Applicant respectfully diagrees. The reference Self et al. refers to a process for producing blow pipe nozzles.

The reference Self et al. reads in column 2, lines 35 to 39: "Between successive swaging operations, where desired or necessary, the mandrel or

mandrels are removed, and the partially-shaped blank is annealed, pickled, bright dipped and cleaned, as hereinafter described". The blank referred to is a blank of a nozzle, however is not a blank of an A-column.. The reference Bignucolo et al does not teach the application of successive swaging operations to a blank of a front axle. Therefore, a person of ordinary skill in the art would not know when to apply annealing, pickling, bright-dipping and cleaning between successive swaging operations. In addition it is respectfully submitted that "annealed, pickled, bright dipped and cleaned" as set forth in the reference Self et al. is an operation clearly distinguished from straight annealing as employed in claims 23, 24, 27, 28

The reference Self et al. then reads in column 5, lines 65 to 74:

"In preparation for use in the process, the blank preferably is washed to remove grease and oil, dried, and is then annealed at a temperature around 900 degrees F. or to a degree that insures against failure of the blank or gripping of the mandrell during the first swaging step or steps. The blanc is then pickled in a solution of commercial sulfuric acid; it is bright dipped in a solution of nitric acid; and it is finally washed in hot water and dried."

As noted above, the reference Bignucolo et al does not employ a swaging step. Since the reference Self et al. employs the annealing step to avoid failure of the blank during a first swaging step and since the reference Bignucolo et al. does not require a swaging step, logic of the combination of references would also require that no annealing step be employed in an absence of swaging in the reference Bignucolo et al, since avoidance of failure of the blank during swaging is

not an issue relative to the reference Bignucolo et al, where the blank is not subjected to a swaging step. Claims 21 and 22 concern the heat treatment between with the deformation steps. Neither the reference Bignucolo et al. nor the reference Meredith suggest a heat treatment. The United States patent 2,267,623 to Self et al. teaches a completely different method for the production of burner nozzles.The reference Self et al. teaches only that a heat treatment can be performed in case of a burner nozzle. However the production of a burner nozzle is completely different from the production of a golf club according to the reference Meredith or of a front axle according to the reference Bignucolo et al.. In addition the burner nozzle does not exhibits any bent region, where a reinforcement is to be generated in the bent region in order to enable acceptance of higher loads in case of a crash of a motor vehicle.

In summary it is respectfully submitted that it is certainly known to produce objects with different outer diameters and wall thickness is by radial deforming. However this is the first time where an A-column was generated, and wherein the thereby produced pre-mold in the narrowing region, where now an increased wall thickness is present, to bent and thereupon the form by inner high pressure deforming such that the reinforcement of the A-column is disposed in the bent region and the region deformed by the inner high pressure deforming, is both new and unobvious, since it had not been known to produce single piece A-columns with such reinforcements.

The Office Action refers to Response to Arguments.

5. Applicant's arguments filed October 31,2007 have been fully considered but they are not persuasive.

In response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller,* 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091,231 USPQ 375 (Fed. Cir. 1986).

Particularly, on page 12, the Applicant states the Bignucolo reference lacks "larger wall thicknesses." The Examiner points out that this particular language is not in the claim and to meet that particular claim limitation of "increased wall thickness" a 35 U.S.C. 103(a) rejection is utilized in which the teaching reference Meredith discloses increased wall thickness. With regards to the Applicant's mentioning of "mount(ing) additional reinforcement device," the Examiner points out that references may often disclose additional features or steps. Therefore, as long as a reference teaches the claimed feature or step the reference is then considered to meet the claim limitations.

Applicant respectfully requests reconsideration.

Where the reference Bignucolo et al. teaches to employ a reinforcement device 9 in connection with a front axle, a person of ordinary skill in the art has no basis in the context of an A-column to remove the reinforcement device 9 from the construction of the reference Bignucolo et al. and to replace the reinforcement device 9 by an increased wall thickness. There is no teaching or suggestion in the references applied for a person of ordinary skill in the art that an A-column can be

obtained from a front axle under removal of a reinforcement device 9, but with a wall thickness increase of a golf club.

While a reference may disclose additional features, a construction of a device three-in-one "A-column –front axle – golf club" is certainly beyond the skill of a person of ordinary skill in the art.

Reconsideration of all outstanding rejections is respectfully requested.

All claims are believed to be in allowable form and a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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